# Lake Pocotopaug Notes and News

*Our Lake  Our Responsibility*

***Spring/Summer 2006, Vol. 1, No 2***

**"The significant problems we face can not be solved at the same level of thinking we were at when we created them."**
**-Albert Einstein**

ENSR completed the 2005 storm water sampling with funds from their 2004 contract with the Town of East Hampton. These samples of storm water targeted areas higher in the watershed's tributaries than previous sampling locations. Locations previously sampled by ENSR and by the Lake Study Group (LSG) in 1991-1992, as well as new stations were identified. On November 6, 2005, wet weather tributary sampling was done using passive storm samplers in the evening, during short periods of heavy rain and thunderstorms.

The cumulative results indicated that overall, nutrient concentrations were higher than in previous years.
Results for the 20 stations sampled:
Ammonia
Min. 0.04 Max. 12.40
Nitrate
Min. 0.01 Max. 0.31
Dissolved Phosphorus
Min. 0.05 Max. 4.62
Total Phosphorus
Min. 0.53 Max. 4.75

Dissolved phosphorus values were high throughout the watershed. Five of the six highest values (1.16-4.62 mg/L) were reported on the northwest portion of the watershed. Two new stations added to a small tributary in this area were returned with some of the highest values of dissolved phosphorus. This station also showed that phosphorus levels decreased downstream. This suggests that the sources of nutrients running into Lake Pocotopaug are not just in the immediate areas of the lake.

Ammonium nitrogen levels were very high compared to previous samplings. Nitrate nitrogen levels were generally lower and consistent with previous results.

ENSR reports: "The results of the 2005 data reinforce the idea that nutrient loading to the lake during wet weather is a major concern. It is not possible to accurately determine what sources are responsible for such high nutrient values with limited data, but two potential causes are lawn fertilizers and land development in general. Both factors could play a role in this case."

Woodlands provide mechanisms that remove nutrients from rain water run off before it reaches bodies of water. Increased residential land use equates to increased lawn area and increased use of fertilizers. Especially newly planted lawns where higher concentrations of fertilizer is needed to establish root systems.

Even if fertilizers were not the issue, contaminants from a wide range of sources get deposited on impervious surfaces and accumulate. A small amount of rain and those nutrients have a "a slippery slope" into the lake. If those contaminants were from pets, geese, or home care products, the samplings taken would have shown nutrient loads in a particulate form, the nutrients detected in this sampling were mostly in dissolved form indicating fertilizer loading.

Buffers must be viewed as one component of protection. Vegetated buffers fail if upland generates concentrated flows. It is estimated that 5% of rain runs off a wooded area & 95% of rain runs off a parking lot.
A 1 inch rainstorm will produce:
1 acre wooded area= 182 cubic feet (1.361 gallons) of run off
1 acre parking lot= 3,449 cubic feet (25,800 gallons) of run off

From University of Rhode Island, Department of Resource Science, Scientific Overview of Coastal Buffer Water Quality Functions

**SOMETHING TO THINK ABOUT**

In October of 2005, East Hampton, Connecticut received close to 13.2 inches of rain over the course of several days. The samples taken by ENSR on November 6, 2005 were first flush sampling during a rain event yielding only 0.11 inches of rainfall. The sampling took place during the time of year that homeowners apply lawn fertilizers containing phosphorus and nitrogen. High proportions of nitrogen as ammonium and phosphorus in dissolved form are consistent with lawn fertilizers. Spreading fertilizer before it rains increases the likelihood of runoff.

The very high values collected during a relatively low precipitation storm (0.11 inches) suggests that a lot of accumulated nutrients washed off the land in large concentrations and into the lake.

What would the results have been if the samples were taken during the heavy rains in October after a long hot, dry summer?

**WHY INTRODUCE NATURAL VEGETATION AREAS BACK INTO YOUR LANDSCAPE?**

**TO KEEP OUT PHOSPHORUS!**

Phosphorus is a natural fertilizer that occurs in rocks and soil, is in phosphorus detergents, sewage leach fields and man-made fertilizers. When phosphorus enters a pond or lake, it becomes the single most important ingredient in promoting algae blooms. Algae are especially responsive to fertilizer since most rely entirely on nutrients extracted from the water. Phosphorus fertilizes these microscopic plants, causing them grow and die off rapidly. The decomposed matter uses up much of the oxygen in the water. If plants along the shoreline intercept the phosphorus before it can reach the pond, they can use it for their own growth and help keep the water clear.

Introducing riparian buffers into your landscape decreases nutrient loading to the lake by replacing the forest and vegetation that was removed as residential development increased.

In 2002 ENSR reported that data analyzing nutrient loading indicated that loads from developed areas were higher than from undeveloped areas. Introducing buffers allow over the land water flow to pass through vegetation and filter out some of the particulates as well as decreasing the velocity of the storm water. Buffer width for water quality will vary depending on upland practices and site features. This management technique not only restores the natural filtration mechanism it reduces lawn care, fertilizer use and attracts wild life.

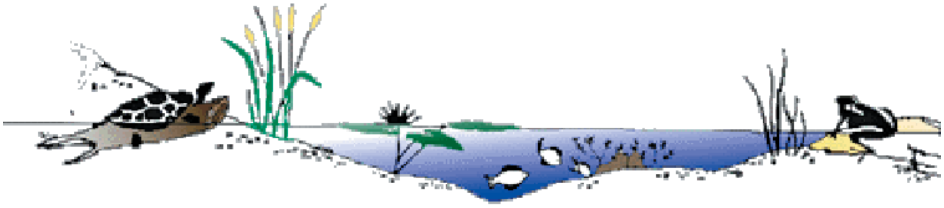
Upland development can overwhelm natural buffer systems. Residents in the upland areas can help by incorporating retention basins and rain gardens into landscaping. Reducing and disconnecting impervious surfaces in uplands can protect natural buffers.

Washing your vehicles with high phosphorus detergent on your driveway may be the equivalent of pouring the dirt, sand, salt and sudsy water directly into nearby lakes or ponds.

The newly formatted Lake Pocotopaug Notes and News will be published three times a year. In support of the concept that education and outreach about watershed management practices requires partnerships, this publication now has sponsorship opportunities. Businesses and individuals interested in more information can contact Ruth Plummer, Director, East Hampton Parks and Recreation Department.

**ACKNOWLEDGEMENTS AND RESOURCES CITED**

ENSR/AECOM International
A Community Effort to Protect our Natural Resources, Wellesley
Department of Public Works, Wellesley Hills, MA
Framingham Conservation Commission, Framingham, MA
University of Rhode Island, NEMO Program



Lake Pocotopaug Notes and News, Spring/Summer 2006, Vol. 1, No. 2
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